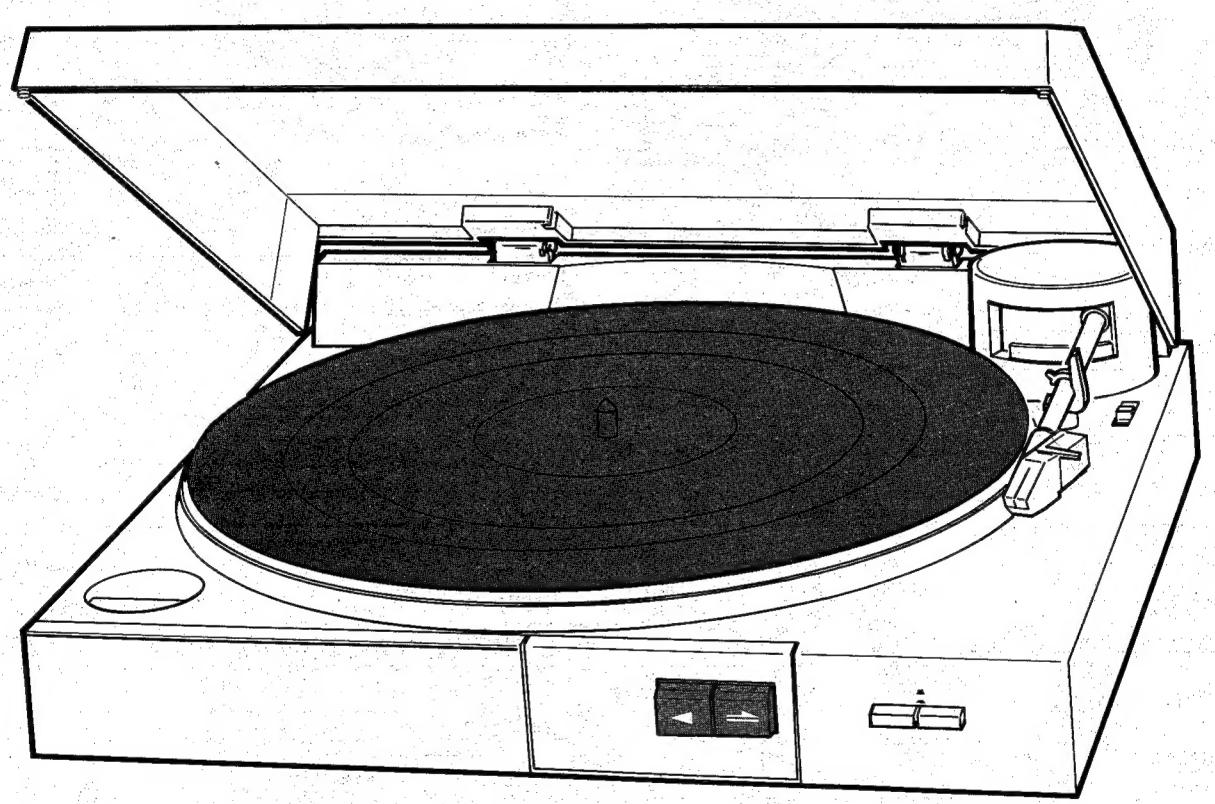
AP-M11

AKAI SERVICE MANUAL



FULL AUTOMATIC PLAYER

MODEL AP-M11

FULL AUTOMATIC PLAYER

MODEL AP-M11

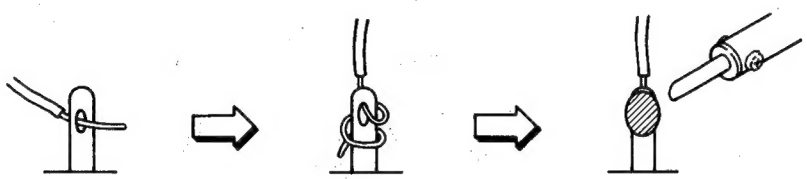
SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks, line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

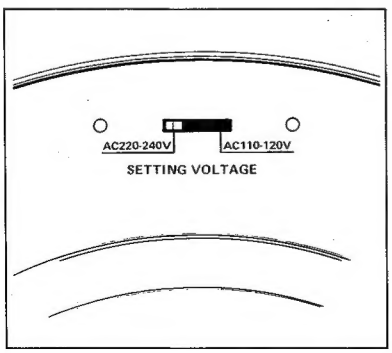
1. Parts identified by the ⚠ symbol parts are critical for safety.
   Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

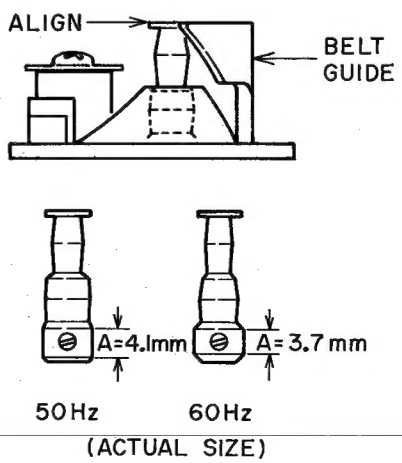
VOLTAGE CONVERSION

Each machine is preset at the factory according to its destination, but some machines can be set to 110V–120V or 220V–240V as required. If your machine's voltage can be converted; Before connecting the power cord or assembling the platter, turn the voltage Selector located on the top of the cabinet with a screwdriver until the correct voltage is indicated. Models for USA, Europe, UK and Australia are not equipped with this facility.



CYCLE CONVERSION

1. 50 Hz and 60 Hz cycle change is effected by changing the motor pulley.
2. 50 Hz and 60 Hz differentiation can be determined by the thickness of the pulleys or the length of the part A, shown in Fig.
3. Set the speed selector to 33 rpm and install the motor pulley by tightening the screw on the pulley with a flat type screw driver so that the upper part of the motor pulley brim and the upper part of the belt guide are lined up as shown in Fig.
4. Confirm that the platter turns smoothly without noise even if the speed selector is switched to 45 rpm.



SECTION 1

SERVICE MANUAL

TABLE OF CONTENTS

For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I. SPECIFICATIONS

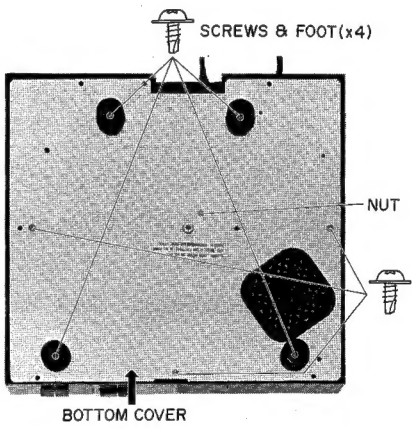
TURNTABLE (PLATTER)	Aluminum alloy diecast
DRIVE SYSTEM	Belt drive full automatic
MOTOR	4-pole synchronous motor
SPEED	33-1/3 & 45 rpm
WOW & FLUTTER	0.05% (WRMS)
RUMBLE	64 dB (DIN-B)
TONEARM	Static balanced straight type
EFFECTIVE ARM LENGTH	200 mm
AIR LIFTER	Oil damped
OVERHANG	10 mm (fixed)
APPLICABLE CARTRIDGE	T4P Plug-in type
CARTRIDGE	VM type (PC-33)
OUTPUT VOLTAGE	3.5 mV
CHANNEL SEPARATION	20 dB
STYLUS	RS-33
OPTIMAL STYLUS PRESSURE	1.25g (Fixed)
POWER REQUIREMENTS	120V, 60 Hz for USA & Canada 220V, 50 Hz for European countries (except UK) 240V, 50 Hz for UK & Australia 110–120V/220–240V, 50/60 Hz switchable for other countries.
POWER CONSUMPTION	8W (A, C, U Models)
DIMENSIONS	350 (W) x 103 (H) x 322 (D) mm (13.8 x 4.1 x 12.6 inches)
WEIGHT	4.5 kg (9.9 lbs)

*** For improvement purposes, specifications and design are subject to change without notice.**

II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling. please dismantle in the order shown in the photographs. Reassemble in reverse order.

2



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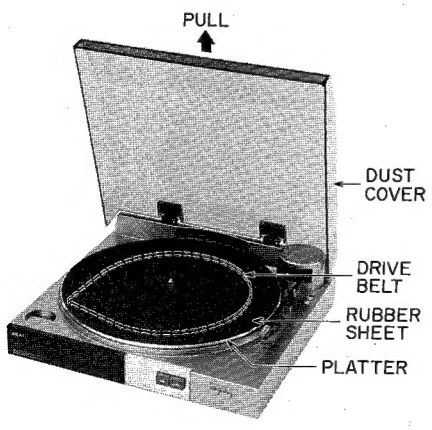
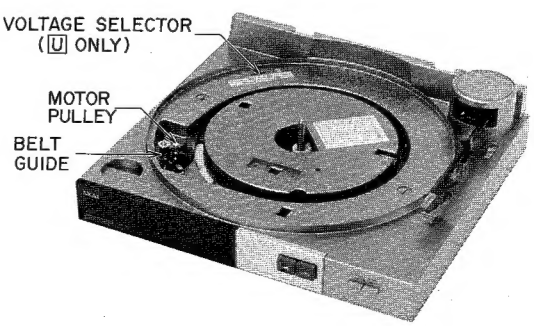


3



III. CONTROLS

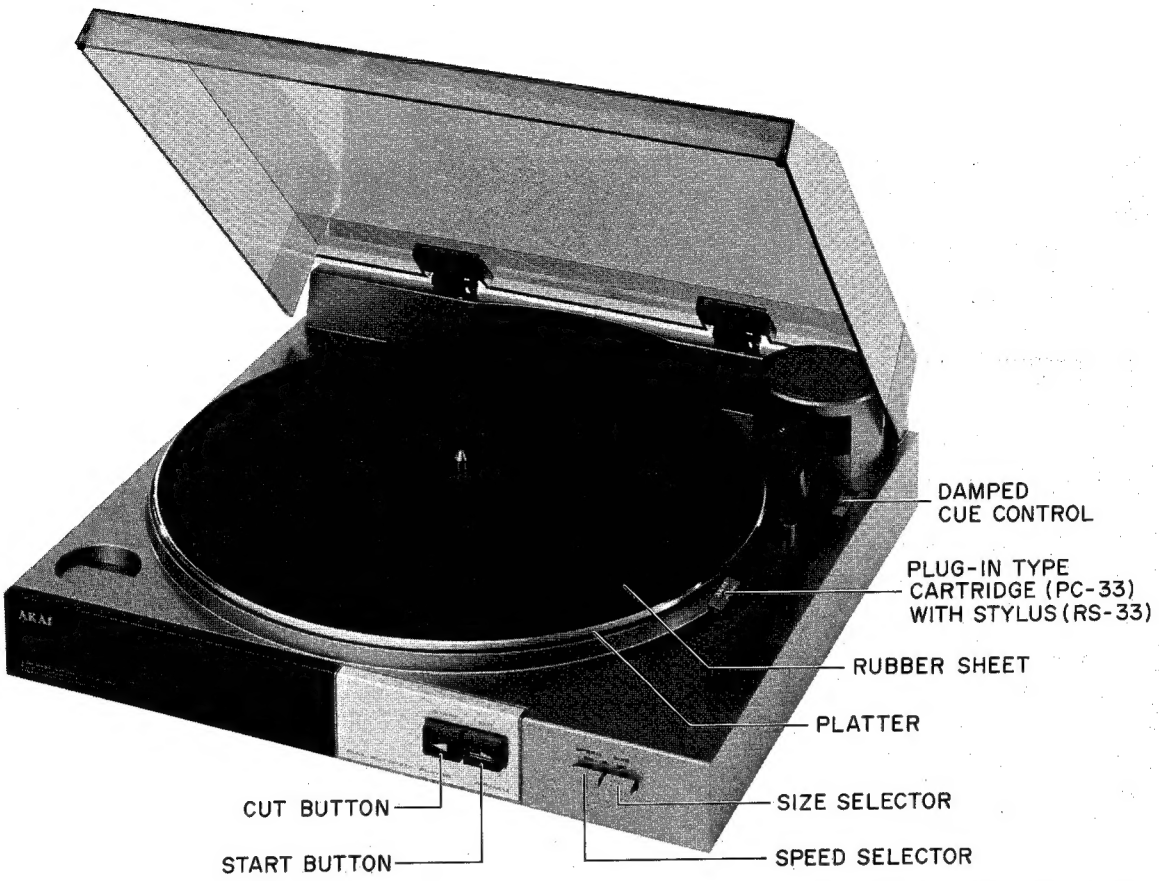


Fig. 3-1 Front View with Dust Cover Opened

IV. PRINCIPAL PARTS LOCATION

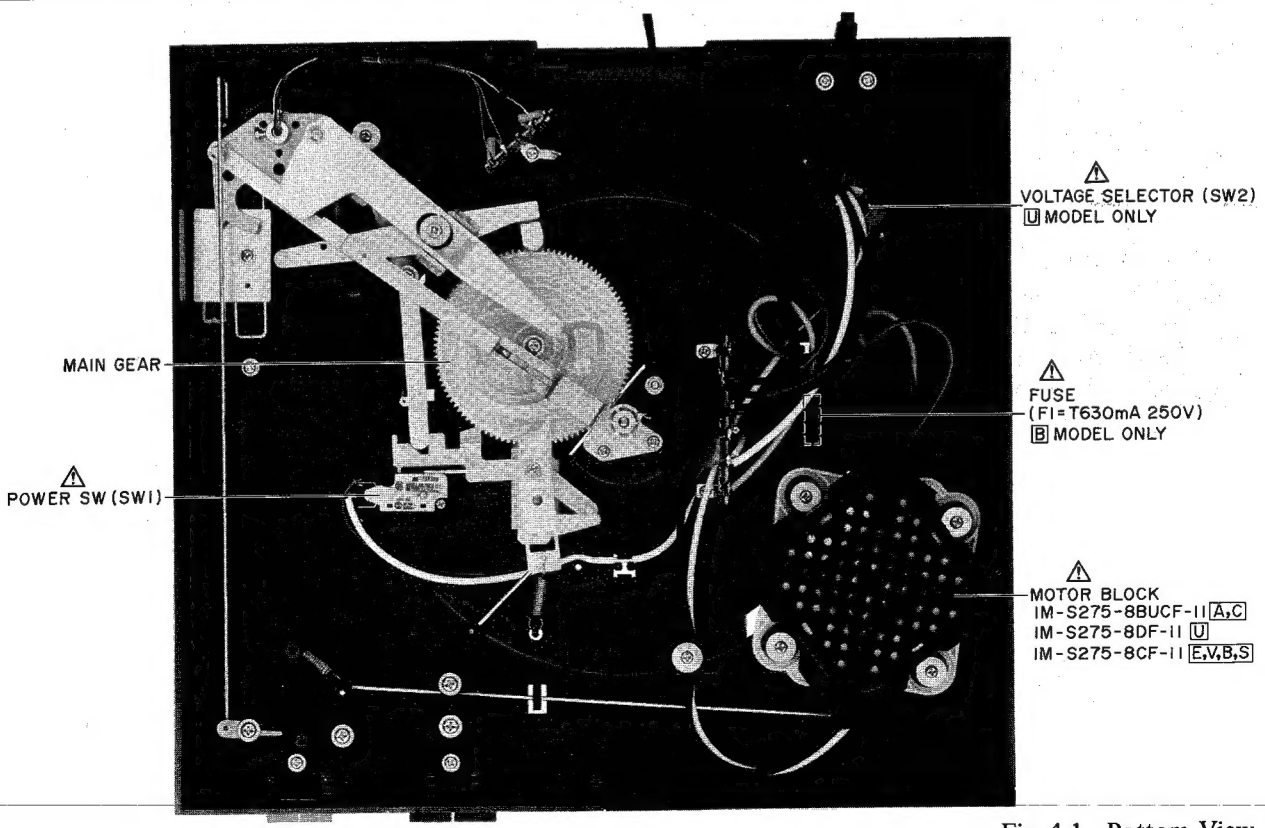


Fig. 4-1 Bottom View

V. ADJUSTMENT

5-1 DESCRIPTION AND PRECAUTIONARY ITEMS FOR START/CIRCUIT OPERATION

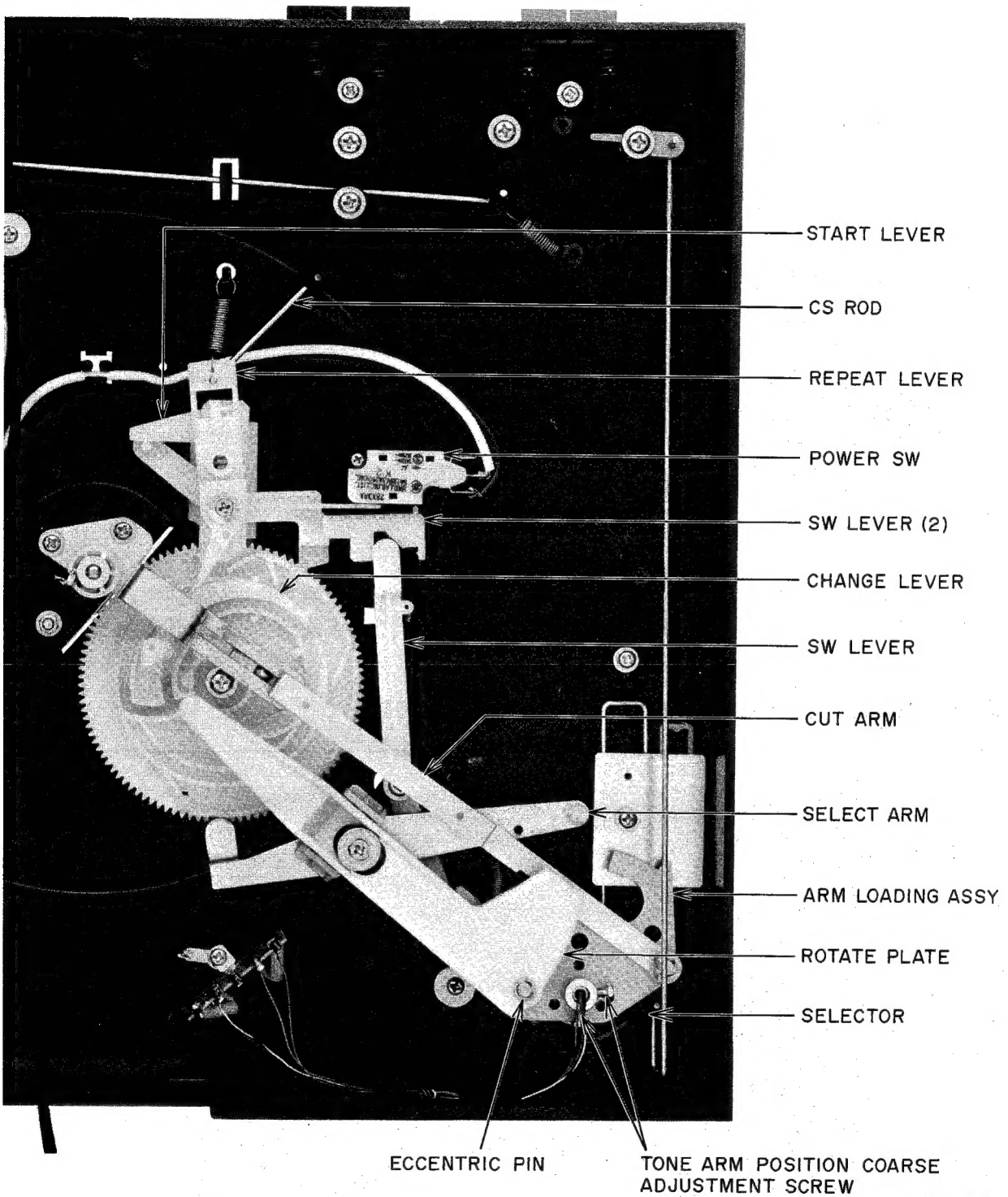


Fig. 5-1

5-1-1 Start/Cut Operation (Refer to Fig. 5-1 to 5-11)

1) When the Start (Cut) button is pressed, the CS ROD starts moving the repeat lever, the start lever, the SW lever (2) and the clutch lever, and the start (cut) operation begins.
2) When the button is pressed, the start lever is released from the repeat lever, pushes the SW lever (2), turns the power SW on and at the same time the clutch plate is pushed by the clutch lever and the rotation of the spindle assy is transmitted to the main gear and thus the main gear starts rotating.
3) When on start, the repeat lever starts moving in the direction D shown in Fig. 5-2. It pushes the change lever on the main gear, and the rotate plate moves along the starting groove, lifts the tone arm up and starts to play the record.

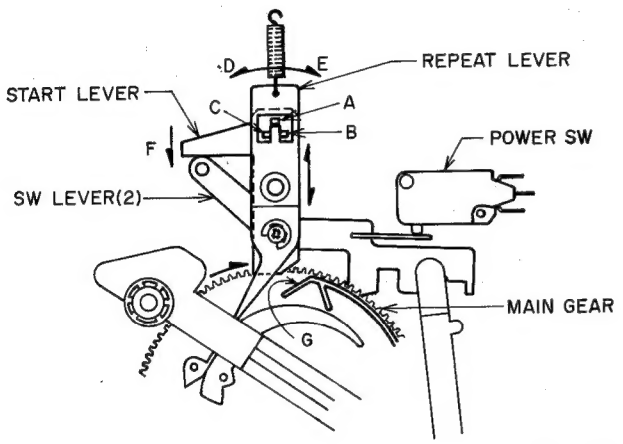


Fig. 5-2

4) When on cut, the repeat lever moves in the direction E shown in Fig. 5-2. The change lever is not pushed and the cut operation is performed along the cut groove which is different from 3).

5-1-2 Points to Note for Start/Cut Operation

1) When on start (when the start button is pressed,) the repeat lever moves from position A to position B as in Fig. 5-2 and the start lever moves in the direction F shown in Fig. 5-2. Also when on cut, the repeat lever moves from position A to position C and the start lever moves in the same direction F as when on start.
2) Both when on start and on cut, the main gear rotates once, but make sure that after one rotation, repeat lever is back in position A, otherwise the start and cut operation will repeat. If there is too much play on the repeat lever or the main gear because of a missing washer, the repeat lever does not touch the G side (refer to Fig. 5-2) of the main gear at the end of the rotation, so the repeat lever does not go back to its original position A in Fig. 5-2.
3) As in Fig. 5-3, when on start, make sure that the repeat lever moves as far as possible in the direction A and pushes the change lever all the way in the direction C from pin B to pin A on the main gear. When on cut, the repeat lever moves in the direction of B but does not push the change lever. After the

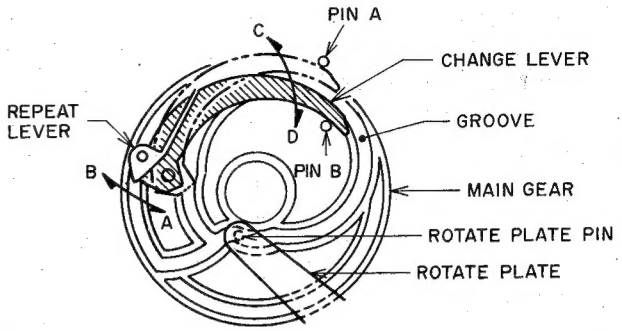


Fig. 5-3

main gear has rotated once, the change lever should be moved back in direction D to the pin B position by the rotate plate pin. For example, if the position of the main gear is too low because a washer is missing (refer to Fig. 5-4), the repeat lever is unable to push the change lever and the cut operation is performed when on start or vice versa.

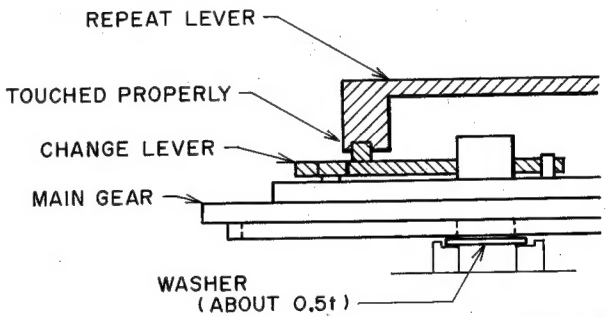


Fig. 5-4

4) When on start or on cut, the power SW is turned on by the SW lever (2). At this point make sure that the distance between the SW lever (2) and the power SW is less than 0.5 mm as in Fig. 5-5. This distance can be adjusted by loosening the screw which fixes the power SW and by moving the position of the SW back and forth until the correct distance is achieved. When the player is turned on and off manually, the distance should also be between 0.1 mm and 0.5 mm.

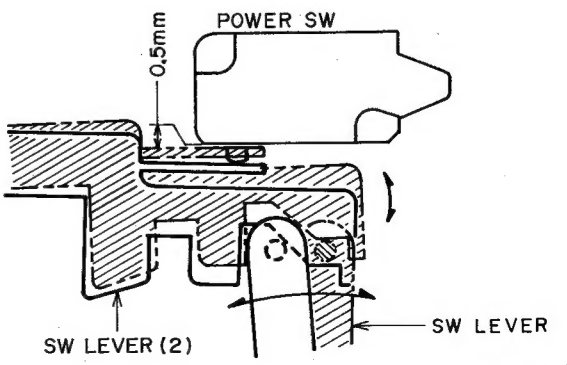


Fig. 5-5

5) The position of the lead-in/out for both the 30 and 17 cm size is determined by the selector, arm loading assy and the position of the select arm. So if there is too much play on the select arm, it will move away from the main gear. Even on start, this can cause the tone arm not to reach the lead-in position or even when it does reach the position, it fails to reach the lead-out position. So check that the select arm contacts the main gear fully as in Fig. 5-6. As shown in Fig. 5-7, the lead-out uses contact between the cut arm and the clutch guide on the main gear block. Make sure that when on lead-out, the cut arm touches the pin on the clutch guide, and the clutch plate catches the rotating spindle assy. The cut arm is made of aluminum and is mechanically weak, so if the lead-out is faulty check the curve of the arm. If lead-out adjustment cannot be achieved by adjusting the lead adjuster eccentric pin, adjustment is possible by bending the cut arm slightly. If even then adjustment cannot be achieved, other mechanical faults might be the cause, so check other mechanical parts.

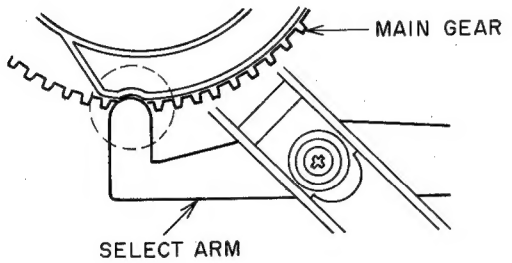


Fig. 5-6

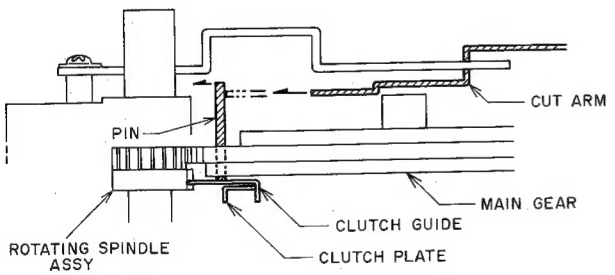


Fig. 5-7

6) With the start operation, the main gear will rotate once and the SW lever (2) will return to the stop position. In order to keep power SW on, the switch lever moves in accordance with the position of the tone arm as in Fig. 5-5 and keeps the power SW in the on

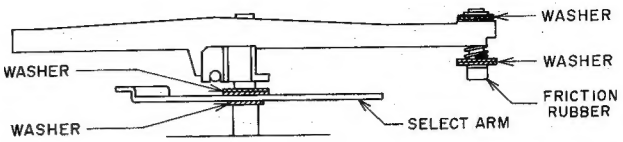


Fig. 5-8

position. Check that the position of the switch lever is as in Fig. 5-9 when the tone arm is at rest. Other than in the rest position it should be as in Fig. 5-9. If the position of the switch lever is incorrect, for example out of the groove, problems will occur such as the tone arm not returning to the rest position.

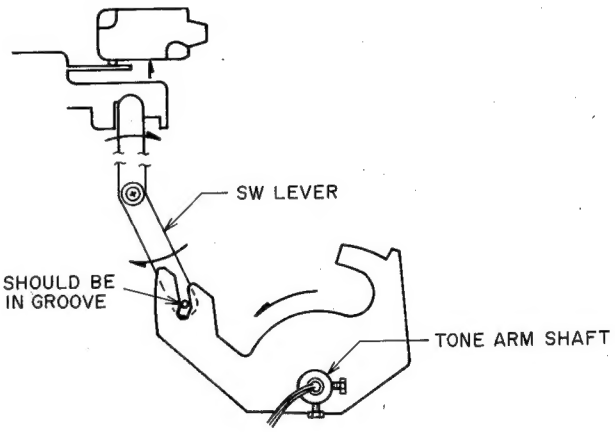


Fig. 5-9

7) As shown in Fig. 5-10, there is a little hole in the clutch lever and one side of spring which hooks on to the start lever goes into the hole. So the clutch lever moves in the same direction as the start lever when on start/cut.

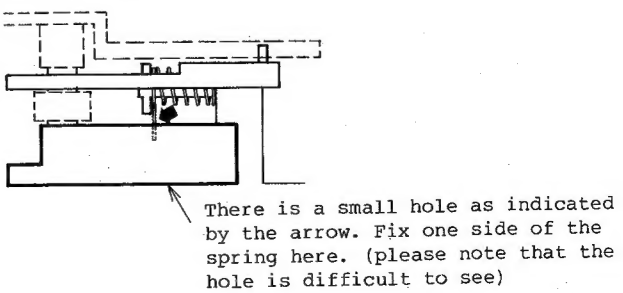


Fig. 5-10

8) Arm motion during lead-in and lead-out is started by friction pressure on part A shown in Fig. 5-11 (Loading arm and friction rubber).

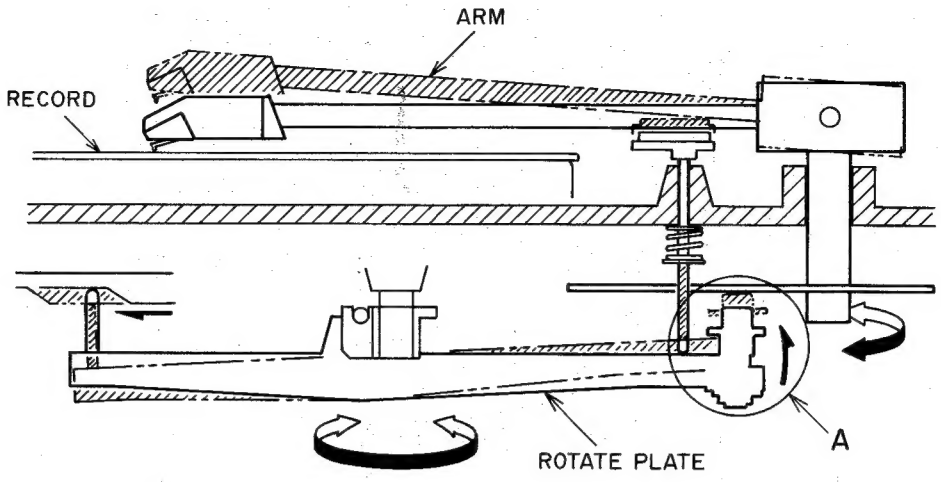


Fig. 5-11

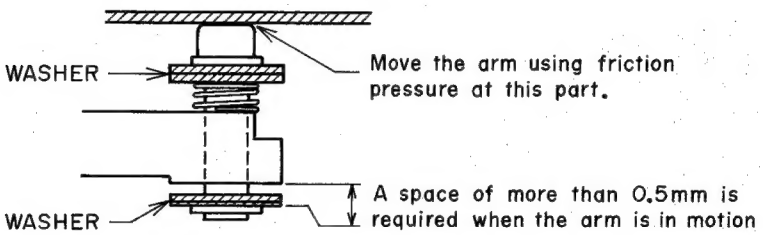


Fig. 5-12

a. When the tone arm is at rest, the gap between the loading arm and the friction rubber should be 2 – 2.5 mm. However, if the arm motion is normal, a 1.5 – 3 mm gap is acceptable.
b. When on start/cut, the loading arm and friction rubber come into contact by the rotation of the main gear and the tone arm moves.
When this happens the gap between the rotate plate and the E ring should be 0.5 mm.
If an adjustment washer is used, it should be possible to turn the washer lightly with the fingers within the 0.5 mm gap. If the space is less than 0.5 mm, the tone arm will move before it has risen completely and particularly in the cut operation it might scratch the record surface. If the space is too much the friction pressure becomes less so the tone arm will not reach the lead in position, or the tone arm moves up and down at the rest position and does not reach the record. Even if it moves, it does not come back to the rest position correctly. So adjust the thickness and number of washers shown in Fig. 5-12 so that the tone arm moves smoothly when on lead-in and lead-out.
c. The contact surface of the loading arm and the friction rubber in item b above should be cleaned with alcohol or equivalent to remove grease before checking the lead-in and lead-out operation.

9) When the tone arm is out of rest position, confirm that the white indicator shown in Fig. 5-13 is set to the outside position. If it is set towards the spindle (inside position), move the indicator to outside with your finger. Otherwise the tone arm will not go back to the rest position during cut operation even manually by hand.

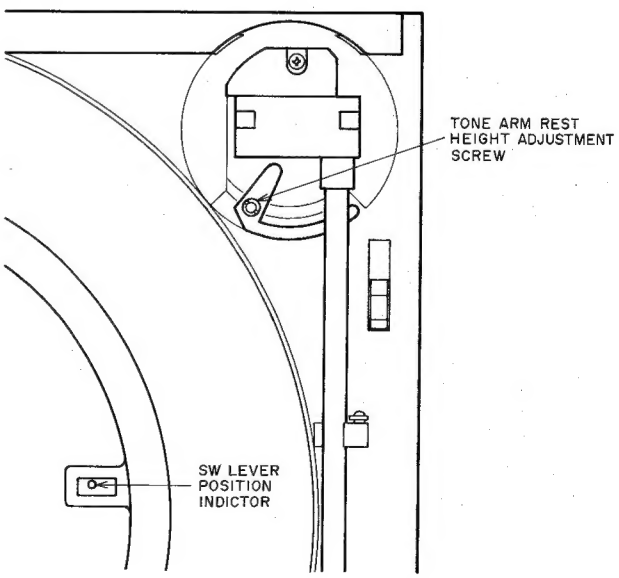


Fig. 5-13

5-2 LEAD-IN/LEAD OUT ADJUSTMENT (Refer to Fig. 5-14)

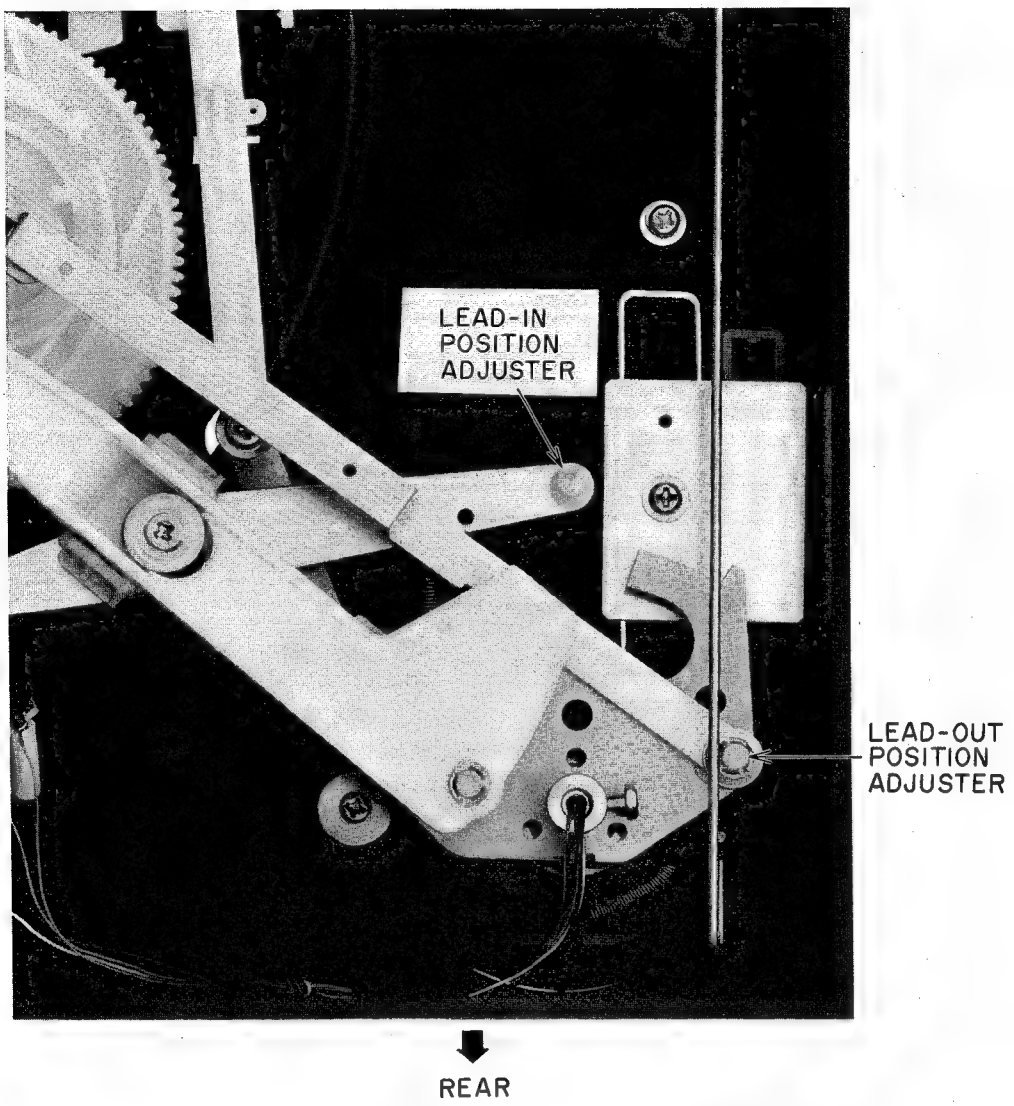


Fig. 5-14 LEAD-IN/OUT Position ADJ (Bottom View)

1) LEAD-IN POSITION ADJUSTMENT
   Place a 17 cm record on the platter and press START button to play, the proper Lead-in position can be obtained by turning the Lead-in Position Adjuster clockwise or counter-clockwise with a flat type screw-driver.
2) LEAD-OUT POSITION ADJUSTMENT
   Place a 30 cm record on the platter and play all the way to the end, the proper Lead-out position can be obtained by turning the Lead-out Position Adjuster clockwise or counter-clockwise with a flat type screw-driver.
3) For the best result, confirm those positions with both 17/30 cm records.

5-3 TONE ARM REST HEIGHT ADJUSTMENT (Refer to Fig. 5-13)

1) Disconnect power cord.
2) Place a 30 cm record and set the size selector to 17 cm.
3) Press the start button and turn the turntable slowly by hand so that the tone arm is located between 30 cm and 17 cm lead-in positions above the record.
4) Adjust the tone arm rest height adjustment screw so that the distance between the tip of stylus and the record is 4 to 7 mm.

SECTION 2

PARTS LIST

TABLE OF CONTENTS

Resistors and Capacitors which are not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

ATTENTION

1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Parts List may be partially changed, please use this parts list for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
4. How to read list

a) Mechanism Block

2. HEAD BASE BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK GX-F66R
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	CS ANGLE ADJUST SPRING

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

b) P.C Board Block

6. SYS. CON. P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-1	BA-T2034A070A	PC SYS CON BLK GX-F44R
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-IC3	EI-331661	IC SN7405N
6-IC4	EI-336725	IC M54527P
6-TR1to4	ET-200985	TR 2SC2603 F,G
6-TR5to28	ET-554657	TR 2SA733A P,Q
6-D1	ED-318292	D SILICON H 1S2473T-77 T26
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26
6-X1	EI-318384	OSC X'TAL NC-18C 3.579545MHZ

SP (Service Parts) Classification

This reference numbers corresponds with symbol numbers of Schematic Diagrams.

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

RECOMMENDED SPARE PARTS

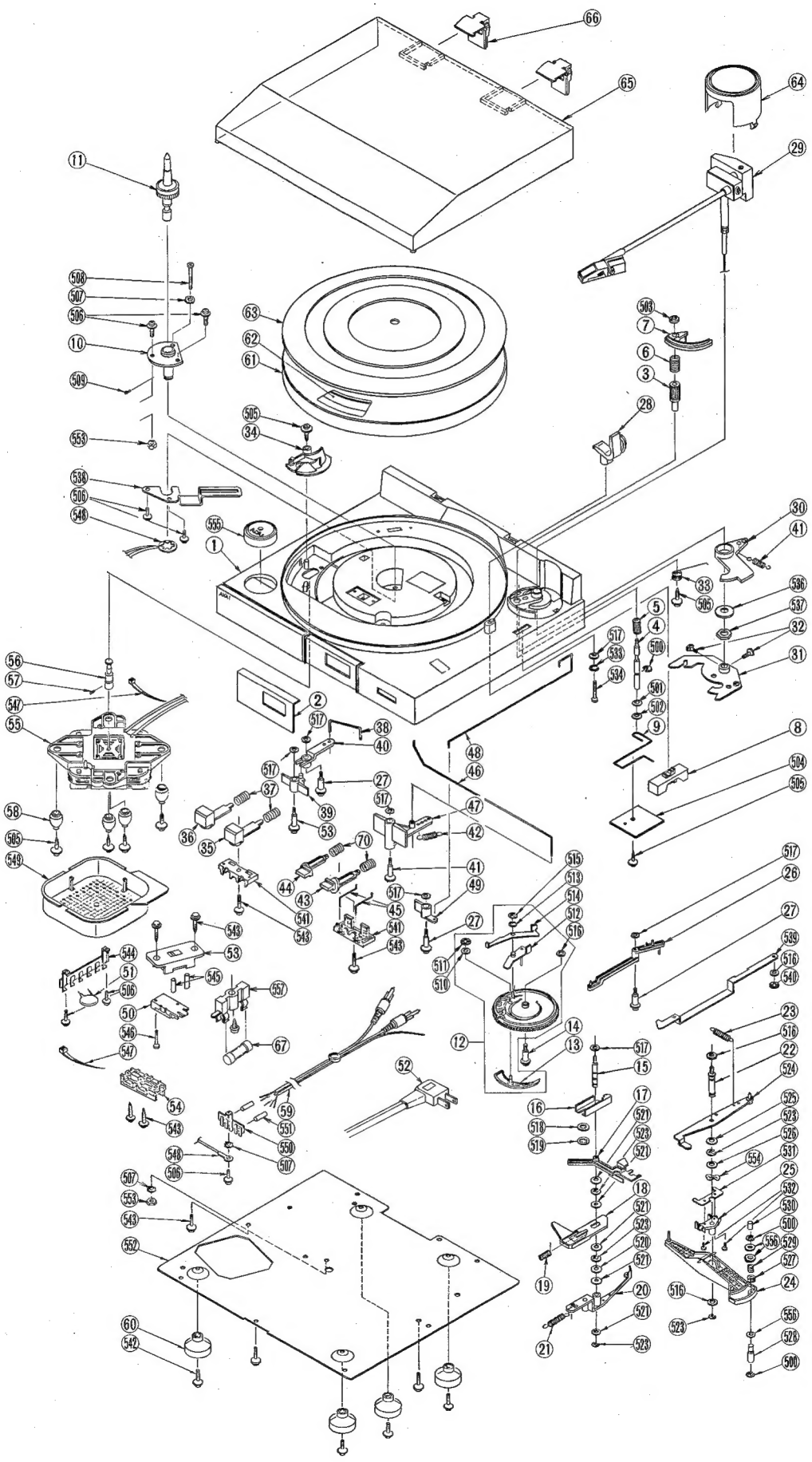
Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

NO.	PARTS NO.	DESCRIPTION
1	BM-712750	⚠ MOTOR BLK IM-S275-8BUCF-11(C,A)
2	BM-712751	⚠ MOTOR BLK IM-S275-8CF-11(E,B,S)
3	BM-712749	⚠ MOTOR BLK IM-S275-8DF-11 (U)
4	EF-339900	⚠ FUSE SEMKO T 250V 0.06A
5	ES-706464	⚠ SW MICRO
6	ES-706492	⚠ SW VOLT CHANGE (U)
7	MB-706483	BELT
8	MR-712752	PULLEY 50HZ
9	MR-712753	PULLEY 60HZ
10	TP-710610	MAIN GEAR BLK
11	TP-712723	SHAFT HOLDER ASSY
12	TP-712724	SPINDLE ASSY
13	TP-712729	TONE ARM ASSY

SYMBOL FOR DESTINATION

A: AAL (U.S.A)
B: UK (England)
C: CSA (Canada)
E: CEE (Europe)
S: SAA (Australia)
U: U/T (Universal Area)

FINAL ASSEMBLY BLOCK



1. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
1-1	BC-712713	CABINET
1-1S	BC-712714	Cabinet-S
1-2	SP-712715	PANEL FRONT
1-2S	SP-712716	PANEL FRONT-S
1-3	TP-706441	BASE ELEVATION
1-4	TP-712717	SHAFT ELVATION
1-5	ZG-712718	SP ELEVATION
1-6	ZG-712719	SP CAM
1-7	TP-710600	PLATE ELEVATION
1-8	SK-712720	BUTTON CUE
1-9	TP-712722	ROD CUEING
1-10	TP-712723	SHAFT HOLDER ASSY
1-11	TP-712724	SPINDLE ASSY
1-12	TP-710610	MAIN GEAR BLK
1-13	ML-710609	LEVER CHANGE
1-14	ZS-710608	SCREW SPL
1-15	ZS-710611	SCREW SPL
1-16	ML-710615	LEVER CLUTCH
1-17	ML-710614	LEVER SWITCH (2)
1-18	ML-710613	LEVER START
1-19	ZG-712725	SP LEVER
1-20	ML-710612	LEVER REPEAT
1-21	ZG-712726	SP SELECTOR
1-22	ZS-710601	SCREW SPL
1-23	ZG-712727	SP START LEVER
1-24	TP-710603	ROTATE PLATE
1-25	TP-710602	ROTATE STAND
1-26	ML-710607	LEVER SWITCH (1)
1-27	ZS-710606	SCREW SPL
1-28	TP-712728	ARM REST ASSY
1-29	TP-712729	TONE ARM ASSY
1-30	TP-710598	SELECTOR PLATE
1-31	TP-712730	ARM LOADING ASSY (2)
1-32	ZS-710574	M6B30x060STL CMT
1-33	ZG-706451	SP IFC
1-34	TP-712731	GUIDE BELT
1-35	SK-712733	BUTTON START
1-35S	SK-712734	BUTTON START-S
1-36	SK-712735	BUTTON CUT
1-36S	SK-712736	BUTTON CUT-S
1-37	ZG-712737	SP BUTTON
1-38	TP-712738	ROD C.S
1-39	ML-712740	LEVER START (1)
1-40	ML-712739	LEVER START (2)
1-41	ZS-710585	SCREW SPL
1-42	ZG-712741	SP
1-43	SK-712742	BUTTON SIZE ASSY
1-44	SK-712743	BUTTON SPEED ASSY
1-45	ZG-712744	SP CAM
1-46	TP-712745	ROD S.S (1)
1-47	TP-712746	CAM C.S
1-48	TP-712747	ROD S.S (2)
1-49	TP-712748	LEVER R.S
1-50	ES-706464	⚠ SW MICRO
1-51	EC-712778	⚠ C CE 103 400VAC
1-52U	EW-349552	⚠ AC CORD 2 CORES KP-224, VFF PL-3 U/T (U)
1-52C	EW-207742	⚠ AC CORD 2 CORES VM-0238, SPT-1 UC (C,A)
1-52E	EW-347673	⚠ AC CORD 2 CORES SP22-12460/CEE (E)
1-52B	EW-346249	⚠ AC CORD 2 CORES LCFL2x0.75(B)
1-52S	EW-201515	⚠ AC CORD 2 CORES KP-560, LTSA-2F(S)
1-53	ES-706492	⚠ SW VOLT CHANGE (U)
1-54	SZ-710570	STRAIN RELIEF
1-55U	BM-712749	⚠ MOTOR BLK IM-S275-8DF-11 (U)
1-55C	BM-712750	⚠ MOTOR BLK IM-S275-8BUCF-11 (C,A)
1-55E	BM-712751	⚠ MOTOR BLK IM-S275-8CF-11 (E,B,S)
1-56A	MR-712752	PULLEY 50HZ
1-56B	MR-712753	PULLEY 60HZ
1-57	ZS-712754	(–) SET2.6x2
1-58	MB-712755	RUBBER CUSHION
1-59	EW-712756	CORD 3P AUDIO
1-60	TP-712757	FOOT
1-61	TP-712758	PLATTER
1-62	MB-706483	BELT
1-63	TP-707625	TABLE SHEET
1-64	BC-712759	COVER TONE ARM
1-64S	BC-712760	COVER TONE ARM-S
1-65	BC-712761	DUST COVER
1-66	TP-712762	HINGE ASSY
1-67	EF-339900	⚠ FUSE SEMKO T 250V 0.06A (B)

Parts listed in 1 to 67 on the exploded view and list are normaly stocked for replacement purpose. The remaining parts shown in this manual are not normaly stocked, because they are not seldom required for routine service.

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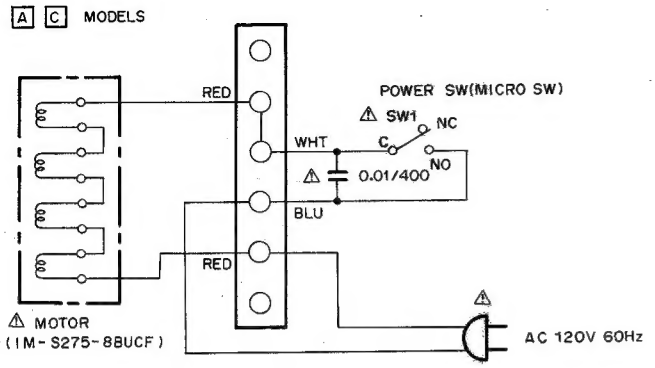
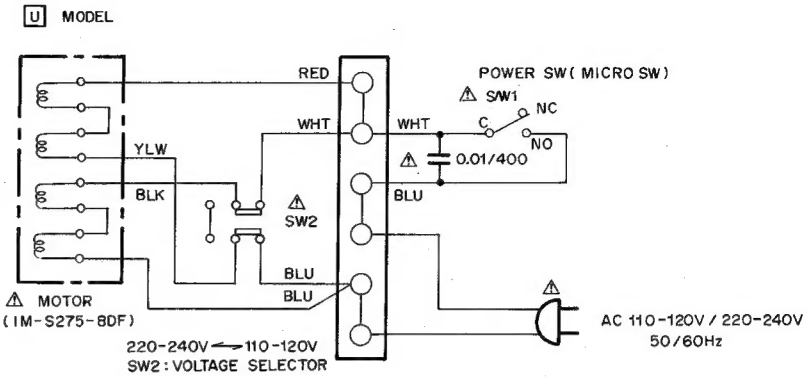
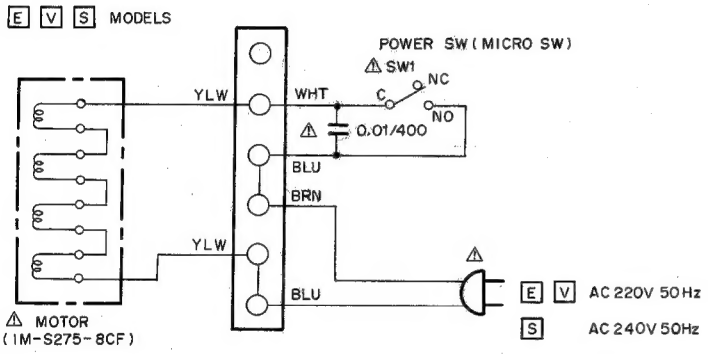
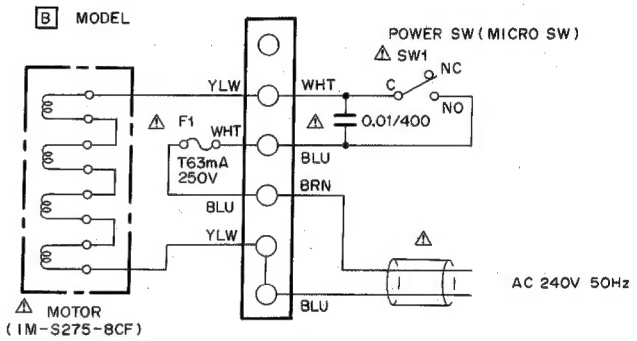
SECTION 3

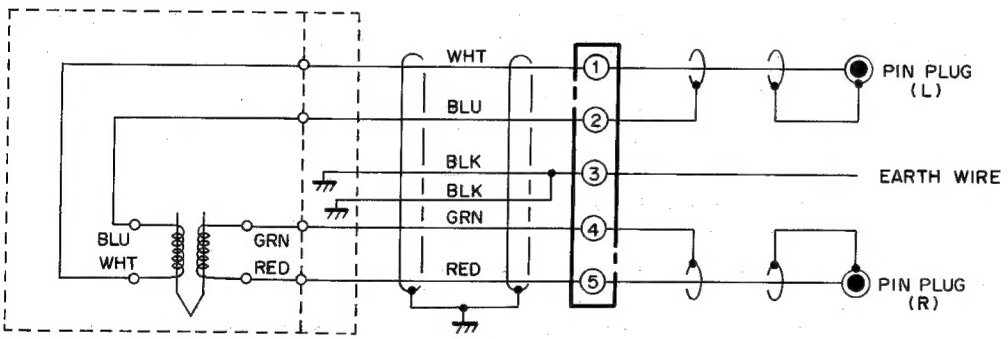
SCHEMATIC DIAGRAM











CARTRIDGE (PC-33 : PLUG-IN TYPE)
STYLUS (RS-33)

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

AP-MII
SCHEMATIC DIAGRAM
NO. 840609A